

DEPARTMENT of ENVIRONMENTAL SERVICES  
Water Supply & Pollution Control Division - Biology Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: WILLARD POND	Lake Area (ha): 39.05
Town: ANTRIM	Maximum depth (m): 19.8
County: Hillsborough	Mean depth (m): 8.0
River Basin: Merrimack	Volume (m <sup>3</sup> ): 3137500
Latitude: 43°01'17" N	Relative depth: 2.8
Longitude: 72°01'00" W	Shore configuration: 1.22
Elevation (ft): 1158	Areal water load (m/yr): 6.13
Shore length (m): 2700	Flushing rate (yr <sup>-1</sup> ): 0.80
Watershed area (ha): 414.4	P retention coeff.: 0.62
% watershed ponded: 0.0	Lake type: natural w/dam

BIOLOGICAL:

		10 February 1998	1 July 1997
DOM. PHYTOPLANKTON (% TOTAL)	#1	DINOBRYON 55%	DINOBRYON 75%
	#2	SYNURA 25%	TABELLARIA 15%
	#3		
PHYTOPLANKTON ABUNDANCE (units/mL)			
CHLOROPHYLL-A (µg/L)			1.26
DOM. ZOOPLANKTON (% TOTAL)	#1	KERATELLA 33%	KERATELLA 31%
	#2	NAUPLIUS LARVA 18%	KELICOTTIA 21%
	#3		
ROTIFERS/LITER		34	50
MICROCRUSTACEA/LITER		29	17
ZOOPLANKTON ABUNDANCE (#/L)		66	71
VASCULAR PLANT ABUNDANCE			Scattered
SECCHI DISK TRANSPARENCY (m)			9.8
BOTTOM DISSOLVED OXYGEN (mg/L)		8.6	6.2
BACTERIA (E. coli, #/100 ml)	#1		27
	#2		
	#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 5.5  
Hypolimnion volume (m<sup>3</sup>) : 946000  
Anoxic volume (m<sup>3</sup>) : None

**CHEMICAL:**Lake: WILLARD POND  
Town: ANTRIM

	10 February 1998		1 July 1997		
DEPTH (m)	5.0	10.0	2.0	8.0	14.0
pH (units)	6.0	5.7	6.0	5.9	5.6
A.N.C. (Alkalinity)	1.4	1.4	1.0	1.1	1.0
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		< 0.05
TOTAL KJELDAHL NITROGEN	0.10	0.40	0.20	0.20	0.20
TOTAL PHOSPHORUS	0.005	0.009	0.006	0.013	0.008
CONDUCTIVITY ( $\mu$ mhos/cm)	18.9	19.6	17.9	17.0	18.5
APPARENT COLOR (cpu)	< 5	< 5	< 5	< 5	< 5
MAGNESIUM			0.26		
CALCIUM			1.3		
SODIUM			1.1		
POTASSIUM			< 0.40		
CHLORIDE	< 2	< 2	2		2
SULFATE	4	4	4		4
TN : TP	20	44	33		25
CALCITE SATURATION INDEX			5.2		

All results in mg/L unless indicated otherwise

**TROPHIC CLASSIFICATION: 1997**

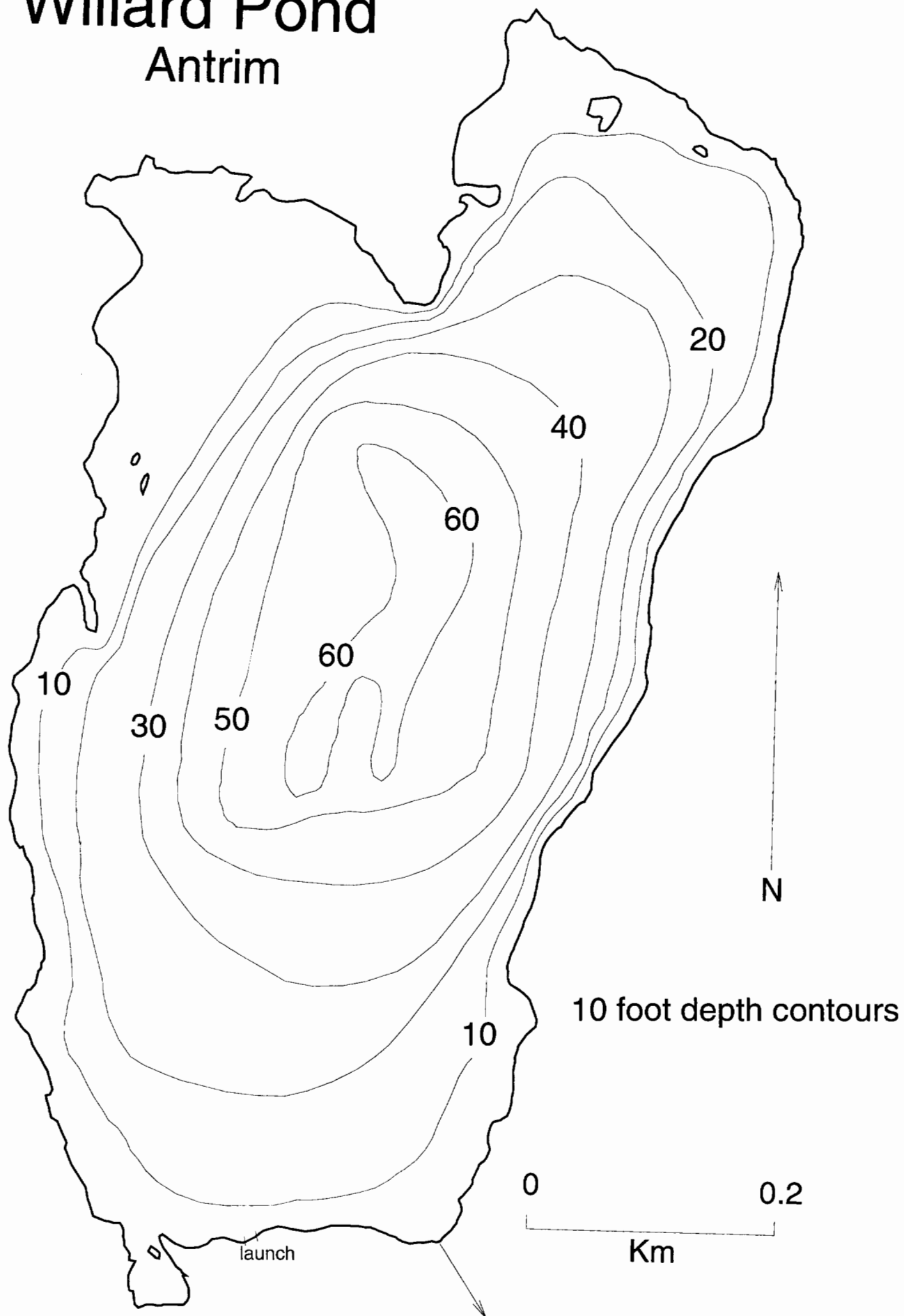
D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
0	0	1	0	1	Oligo.

**COMMENTS:**

1. Willard Pond was previously surveyed in 1986 and was also classified oligotrophic at that time. The bottom dissolved oxygen level was better in 1997 than in 1986, perhaps because of an earlier sampling date in 1997 (mid-August was the 1986 sampling date). In 1986 there was essentially no oxygen at the 17 meter depth.
2. This is a moderately acidic, crystal clear lake with low productivity.
3. No motors allowed.
4. Good boat launch site.
5. No development around the pond; this is a wildlife management area operated by the Audubon Society, and is a designated loon sanctuary.

# Willard Pond

Antrim



# FIELD DATA SHEET

LAKE: WILLARD POND  
DATE: 07/01/97

TOWN: ANTRIM  
WEATHER: PARTLY CLOUDY; LT. BREEZE; 90s

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	24.4	8.0	95 %
	1.0	24.1	8.2	97 %
	2.0	23.8	8.1	94 %
	3.0	23.4	8.3	96 %
	4.0	22.9	8.3	94 %
	5.0	20.0	10.0	110 %
	6.0	15.5	11.1	110 %
	7.0	13.5	11.4	107 %
	8.0	11.5	11.5	103 %
	9.0	10.4	11.4	100 %
	10.0	9.4	11.3	97 %
	11.0	8.3	11.0	93 %
	12.0	7.0	10.3	84 %
	13.0	6.8	9.9	78 %
	14.0	6.3	9.0	72 %
	15.0	5.9	7.9	60 %
	16.0	5.7	6.8	52 %
	17.0	5.6	6.2	48 %

SECCHI DISK (m): 9.8  
BOTTOM DEPTH (m): 17.3  
TIME: 1300

COMMENTS:

\*Dissolved oxygen values are in mg/L

# Willard Pond Antrim

A detailed map of Willard Pond in Antrim, showing the shoreline and numerous sampling locations marked with letters and numbers. The pond has a complex shape with several inlets and a narrow channel. A north arrow is located on the right side, pointing upwards. A scale bar at the bottom right indicates a distance of 0.2 Km. The sampling locations are marked with letters (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z) and numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). The letters and numbers are distributed throughout the pond, with a higher concentration in the central and northern areas. Some locations are marked with both a letter and a number (e.g., A1, B2, C3, etc.).

# AQUATIC PLANT SURVEY

LAKE: WILLARD POND

TOWN: ANTRIM

DATE: 07/01/97

Key	PLANT NAME		ABUNDANCE
	GENERIC	COMMON	
d	Dulichium arundinaceum	Three-way sedge	Scattered
P	Pontederia cordata	Pickerelweed	Scattered
L	Lobelia dortmanna	Water lobelia	Sparse
e	Eleocharis	Spike rush	Sparse
A	Sagittaria	Arrowhead	Sparse
B	Brasenia schreberi	Water shield	Sparse
f	Chlorophyceae	Filamentous green algae	Scattered
S	Sparganium	Bur reed	Scattered
I	Iris	Iris	Sparse
N	Nymphaea	White water lily	Scattered
G	Gramineae	Grass family	Sparse
Y	Nuphar	Yellow water lily	Scattered
E	Eriocaulon septangulare	Pipewort	Scattered
U	Utricularia	Bladderwort	Sparse
O	Cephalanthus occidentalis	Buttonbush	Sparse
W	Potamogeton natans	Floating-leaf pondweed	Sparse
k	Kalmia latifolia	Mountain laurel	Sparse
M	Myriophyllum humile	Water milfoil	Sparse

OVERALL ABUNDANCE: Scattered

## GENERAL OBSERVATIONS:

1. Plants were scattered around the shoreline.
2. The native species of water milfoil was present.